

# Designs for Learning – A Theoretical Perspective

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*In this article, I will introduce a perspective on learning as complex processes of transformations of signs, by way of modes and media in different institutional settings. I will also discuss a design theoretic perspective in relation to different framings of knowledge and learning practices.*

## NEW CONTEXTUAL DEMANDS

The post-industrialized era of globalization and multi-culturalism, migration and travel, information flow and ICT (cell phones with sms and mms, digital resources with Internet, Web 2.0 etc.) open up for far more information, text production and perspectives than ever before. This also adds a new position for consumers: they become producers of information as well. New web tools and platforms (like iMovie, iPhoto, flickr.com, youtube.com, Mind Manager and Moodle) make users editors and producers of content, not merely readers of predefined information. The role of education in relation to the forming of identities has undergone profound changes as well. The introduction of individual curricula seems to be a phenomenon with far reaching consequences. Our current society is in a state of change that requires a new understanding of knowledge, learning and identity formation. The long period of time pupils nowadays stay in school makes inclusion, rather than exclusion, a central aspect of what schooling is about. The school is nowadays more than a mere sorting mechanism for the future labour market. It is a place where children and teenagers slowly mature in isolation from a grown up world. However, children and teenagers are also fully engaged in communicative relations, where they exchange symbolic values and information, and negotiate social status but also develop new kinds of skills related to virtual realities. And we should keep in mind that “virtual reality” is as real as “physical reality”. With respect to these changes, the concept of learning has to change as well.

## LEARNING AS BEHAVIOUR...

Learning as behaviour (Skinner) was a central issue for the industrialized societies during the 1950's and 60's. Control of behaviour, in terms of reinforcement of “right” or extinction of “bad” behaviour, was a mental framing in a production system, heavily dependent on individuals and their capacities to cope with repetition and monotony.

## ... AS CONCEPT BUILDING AND EXPERIENCE...

Another orientation, based on cognitive sciences and constructivism (Piaget) focused more on concept building strategies and individual development. The capacity to internalize a new middle class society, with more unclear social bonds than was prevalent in the industrialized class society, became of greater importance. Also the pedagogy of Dewey, developed in a society of immigrants and cultural diversity, became of relevance.

## ... OR AS SOCIAL COMMUNICATION

However, the competence to communicate and use complex artefacts also underlined the need of social skills. Learning as situated cognition, dependent on the interplay with artefacts, and knowledge as social knowledge laid the road to a Vygotskian renaissance.

## A DESIGN THEORETIC PERSPECTIVE ON LEARNING

An increasing interest for design perspectives in learning can be noticed during the last decade (Wiggins & McTighe, 1998; Gagnon & Collay, 2001; Wasson & Ludvigsen, 2003). However, most of the research work done so far is either rather normative or user oriented. In a user oriented design process, emphasis is laid on transparency, user control and playability, social-action space and personal connectedness (Lövgren & Stolterman, 2004). From a social semiotic point of view, design is a way to configure both communicative resources and social interaction (Kress & van Leeuwen, 2001). These aspects of communication give way to a new understanding of learning.

The concepts of “education” and “learning” are strongly linked to institutionalized practices: in everyday, incidental situations, in semi-formal education like preschools or work places, or in formal education in schools or universities. Also learning spaces in museums and theatres can be more or less “formalized”. Institutions are here understood as “legitimized social groupings” (Douglas, 1986, p. 46; see also Douglas, 1996), grounded in shared classifications, rituals and sanctions. These practices of classifications, rituals and sanctions are rooted in social relations and manifested in different knowledge domains. They hereby frame new situations, even though individuals have to negotiate and act to uphold - or change - social meaning. Negotiations are carried out through the elaboration of symbolic resources. For example relations between text and society can be studied in the process of “interpellation”, wherein we create a mental space and position ourselves (or in texts are positioned) as individual subjects (Eilard, 2008).

Designs for learning has been elaborated at the crossroad between social semiotics and Vygotskian inspired socio-cultural theories. Social semiotics highlights communicative processes, not learning, and especially the role of

sign making (and sign interpretation). What is not prevalent in this approach is the social framing outside the situation itself (with some exceptions). Socio-cultural theories, on the other hand, have much more to say about institutional framing and the role of artefacts in communication and learning (Säljö, 2005). Also the role of artefacts for the collective memory is discussed here. However, much less is said about what this means for concrete practices in micro-situations. “Designs for learning” is an elaboration of theoretical approaches of both socio-cultural framings and sign making practices.<sup>1</sup>

Design in this context deals with changed dispositions towards information and knowledge. “Design” is a necessity for architects, publishers and planners, who design time, space and processes for teaching (or information processes) and learning; for teachers who design the situated environments and processes of learning; and for the individual student who designs his or her own learning path. The designer, at all levels, asks how he or she can use material resources and the structures of power in a specific environment (Kress & Selander, in press).

The concept of “designs for learning” highlights the material and temporal conditions for learning as well as the learning activity itself. The use of modes and media in processes of interpretation and identity construction is here central for the understanding of learning activities. Learning is thus seen as an activity where signs in different media (information) are elaborated, and where the forming of new signs in new media (re-configuration and re-contextualization) takes place. Thereby new knowledge and new competence can be traced. “Knowledge” is defined as a capacity to use an established order of signs and engage in the world in a meaningful way. “Learning”, consequently, is defined as an increased capacity to use signs and engage meaningfully in different situations. Learning is here understood as a process of interpretation and sign production (Selander, 2003; 2008).

#### SIGNS FOR LEARNING - SIGNS OF LEARNING

Signs, and configurations of signs, are like rhizomes, with great varieties of possible meanings. But this does not mean that any interpretation is meaningful or relevant. Signs are embedded in social relations, organizing principles, reading paths and signifying practices. What a combination of signs “stands for” is in this sense not arbitrary (Kress, 1993). So is the case with traffic signs and text genres, road maps and time tables. Signs are parts of structuring social practices. Meaning making in schools is framed by curricula, pedagogic texts and (printed or virtual) educational media (Valverde et. al., 2002). The information flow is to some extent both free and restricted. Tensions between the affordances and representations in different media on the one hand, and institutional framing on the other hand, are very clear in the school context.

Text genres offer negotiable spaces of meaning. Texts are composed in line with (albeit sometimes also in opposition to) social norms and standards. A text genre is a social agreement, a text norm, for which texts shall have status as text of a certain kind: a cooking recipe, a traffic sign or news. These are all dependent on social regulations and a degree of expected trustworthiness. Genres make it possible for authors (designers of texts, games etc.) and readers (designers of interpretation and application) to communicate without too much effort. Every genre has its “semiotic economy”, its way of organizing all accessible information in “natural” and “usual” ways (Stewart, 2001). Let us take one examples: the news. When we are looking at the news, we (more or less) know what to expect: everything from terrible events in far away countries to the (mostly) calm weather reports, assuring us that this particular day is more or less the same as the day before. In the school context, much of what is expected belongs to routines of reading school textbooks and standards for particular knowledge domains.

The reading of signs is both situated and institutionally framed, let it be by unconscious habits or more elaborated regulations, as is the case in professional work. Even though situated practices in many cases are “open” and not at all predefined, the situation itself is embedded in a social “setting” of aims, goals and tools and, as in schools, assessment standards. We can think of playing music for pleasure with friends or preparing a concert. We have different goals and assessment standards for these two occasions (pleasure/did we have fun vs. quality of performance and interpretation).

Learning will here be discussed in terms of sequences of activities related to transformations and formations of signs, not as momentary activities. When a person engages in something special, he or she has different resources at hand. These resources also function as organizers of activities and of tempo (c.f. Jewitt, 2008). The offered systems of signs are configured by way of modes (letters, sounds, gestures, pictorial elements, moving images, colours etc.) and media (like book, screen, radio or film). To understand something is to be capable to use signs and form new combinations. Being able to show “how” one understands is a key issue. “How” and “what” one understands are intertwined entities. It is not an exaggeration to say that there is no understanding beyond the signs. It does not seem to make sense to accept assumptions about “understanding” beyond the capacity to show this understanding, in one way or another.<sup>2</sup> In education and learning this also leads us to underline the importance of “reading” the signs of the Other, as well as the importance of developing sensitivity for signs or instances of learning (Björklund Boistrup, 2008; Tholin, 2008).

### “DESIGNED INFORMATION AND TEACHING SEQUENCES” VS. “LEARNING DESIGN SEQUENCES”

“Designed information and teaching sequences” is a concept that captures the world of prefabricated learning resources, formalized work and strict time-tables (lessons). The role of the teacher is to “bring” knowledge to the student, and the student’s role is to remember by heart and to learn specific skills. Thus, knowledge about classificatory systems was only some 40–50 years ago one of the central aspects of education: to collect and classify flowers or insects was at the time more important than understanding biological development and function or how to use natural resources in a careful way. To correctly prove a geometric law was more important than being able to think of different possible mathematical solutions to a problem. However, the number of classificatory systems and the amount of information make it almost impossible today to enforce narrow standards for what knowledge is about. The ability to search, select and critically evaluate information, as well as the ability to present information, is of importance today. Remembering by heart is no longer the only aspect of being educated.

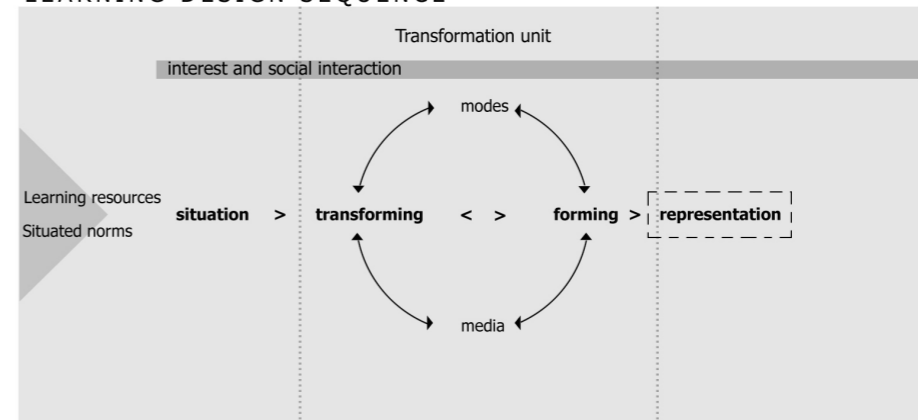
“Learning Design Sequences” (LDS) is a theoretical map for the purpose of analyzing critical incidents in (a creative) learning process, in a process of meaning making. This model enhances the process from a defined situation in an informal learning process, a setting in a semi-formal learning process (like an exhibition) or a teacher’s (or a computer program’s) setting of a “scene” in a formal learning process, through the transformation and formation of signs to a more or less required outcome, a representation. Transformations and formations of signs may also be identified at different levels in the semiotic hierarchy: from basic embodied perception-affect, via punctual actions and meaning making and understanding of single categories of conduct, to meta-rules and general orientation (Zittoun, 2006, p. 41). The group climate, the formal and informal interaction between students and teachers or visitors and guides furthermore creates a social and mental space of possibilities and restrictions. In this process, focus is laid on the transforming of given signs and the forming of new signs as traces of learning and development of new capabilities.

#### LEARNING DESIGN SEQUENCES AS A GENERAL APPROACH TO LEARNING

This first model, in a series of three, gives the general principles for what has been described in the last paragraph. The starting point, the “situation”, is embedded in a social practice with different kinds of social norms and with different semiotic resources at hand. The duration of the process can be rather short (seconds) but also longer (like hours or days). In many instances we are put in situations where we try to figure out the challenge and what standpoint

and action that is meaningful. It could be situations where we ask ourselves if the bus ticket still is of value or if we can swap a book, for example given as a present, for another one in the book store. In each such micro situation we also learn something about what is usual or “proper”, about restrictions and regulations etc. And there are also moments of creativity when we try out different solutions. Another example would be the writing of this article, where I as an author try out different arguments, ways of representing basic ideas or even adequate English terminology compared to what is correct in the Swedish language. In this case, the representation is the text and the model. However, when I test the value of my ticket in front of the bus driver, there is no idea of representation except my “aha-” reaction.

#### LEARNING DESIGN SEQUENCE



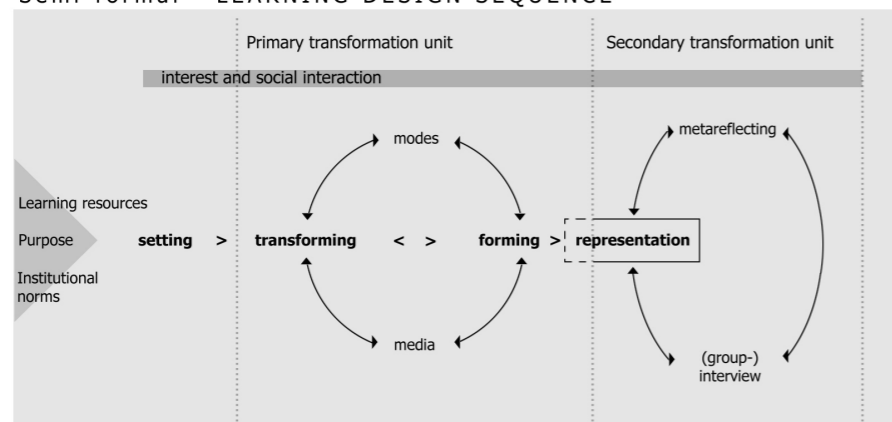
#### ...IN SEMI-FORMAL...

In a semi-formal learning sequence, we start with a setting (not with a situation as before) where the learner is confronted by an articulated purpose, as in a museum exhibition. The norms are more clearly defined here in terms of how loud you are supposed to speak, in terms of walking around instead of running around and usually in terms of not touching the different objects. The exhibition has a purpose: for example to show a technical solution (steam engine), a historical time (the Vikings) or a specific period of art (Impressionism). Museums are also, nowadays, clearly defined as social meeting places and learning sites. They have different resources at hand: the designing of the exhibit room and the showcases, the central and marginal places, what comes first and what follows, the design of sound and light, the selection and placement of objects as well as the stories related to these objects, like in printed catalogues or on digital tapes.

The exhibition at large is an orchestration of modes to engage with in different ways. The visitor can use many different resources to explore the exhibition. Usually visitors talk about what they see or they buy a catalogue, a postcard or some other kind of museum souvenir. Some museums nowadays offer possibilities for visitors to form their own catalogue, as their own interpretation and representation of the exhibition. In a research project, visitors can also be filmed while walking around, they can be asked to take their own photos, they can be interviewed and they can be asked to draw mind maps etc.<sup>3</sup> In this case, representations are explicitly asked for, which of course is not the “normal” case when visitors take interest in museum exhibitions.

Learning Design Sequences are in this example a bit more formally embedded than in the previous case (the first model). But also here we can follow how people (in this case the visitors) engage with the contextual situation (the exhibition), what kind of signs they elaborate on and what kind of new representations they are forming.

#### Semi-formal - LEARNING DESIGN SEQUENCE

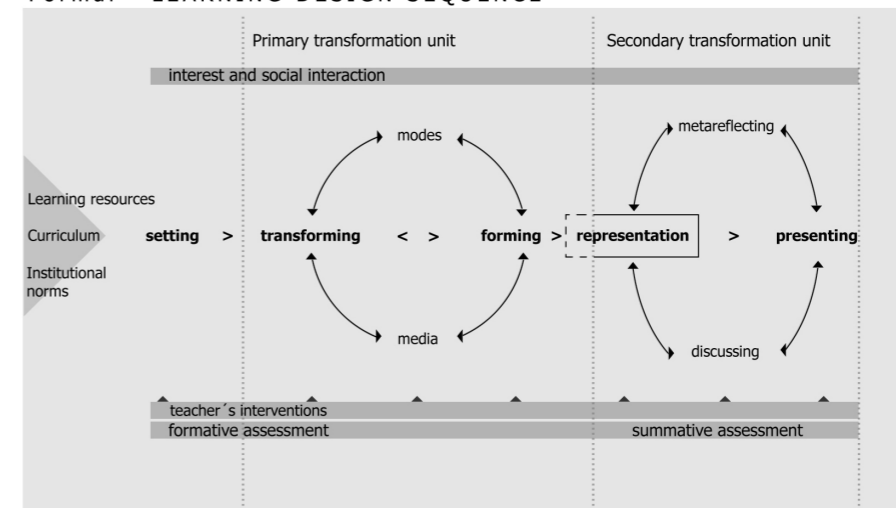


#### ... AND FORMAL SETTINGS

Our last case will be the formal educational setting. Here we have not only purposes in a general sense but also defined curricula, even more clearly defined institutional norms and also many prefabricated learning resources (textbook, exercise books etc.). The process, also here characterized by the transforming and forming of signs, is embedded within formalized horizons of expectations and outcomes, with formative and summative assessment procedures and with a clear goal to produce new representations (essays, PP-presentations or tests etc.). This Primary Transformation Unit is followed by a Secondary Transformation Unit, where students are expected to present their understanding and reflect on both the process and the outcome (the representation).

A sequence starts when the teacher introduces a new task and sets the conditions for the work. The Primary Transformation Unit then entails the interpretation of the task and the setting, and the process of transformation and formation of knowledge – by way of different modes and media. The Secondary Transformation Unit starts with students presenting their work. If the goals, as well as the expectations of the process and the product, are clearly defined and explained in the beginning, both students and teachers will have a powerful tool for reflection and evaluation. During the whole sequence, teachers make interventions and have the possibility to reflect on the signs and indications of learning that occur during the process.

#### Formal - LEARNING DESIGN SEQUENCE



#### CRITICAL INSTANCES OF LEARNING AND MEANING MAKING

The aim of this model “Learning Design Sequences” is to analyse the design activity in learning sequences, the formation and transformation of knowledge when people (visitors, students etc.) engage in different processes of problem-solving, information-seeking and sign-producing activities.

In traditional teaching (if we may say so), goals are not clearly defined beforehand and signs and indications of learning are not highlighted during the process. The traditional class-room teaching activity, based on school textbooks, takes many aspects of the learning process for granted. However, also new communicative and virtual environments for learning are mentally framed by the “old school thinking”, and thereby not seeing learning as a process of sign making, but rather as context free, mental collections of “facts”. An understanding of learning as a process of semiotic transforming and forming

activities, also leads to a need for developing assessment criteria of a new kind. The conceptual reformulation of learning gives a new frame for doing so.

#### SOME EMPIRICAL EXAMPLES OF LEARNING DESIGN SEQUENCES IN FORMAL SETTINGS

The beginning and end of an activity, from setting to presenting, can be discussed in terms of a “narrative”, that is a beginning related to a problem of some kind and a solution. During the setting, the teacher can inform the students about a large range of aspects: the idea of the activity, the expected product, the criteria for judgements and so on. In our studies<sup>4</sup>, it seems to be the case that it is in the upper secondary schools that teachers give enough information to the students. If this is not the case, the teacher has already lost the possibility to adequately support and assess students’ learning.

Students seek and transform information, they cut and paste information from the Internet, but they also produce new information by way of making interviews or films, producing music or constructing three-dimensional objects. The students also test (performative mimesis) different ways of working and behaving (Fischer-Lichte & Wulf, 2001). Students finally configure their representations in a form that reflects their understanding of the task. The transforming-forming process contains many choices and decisions, which may also be of importance for the meta-reflection and critical evaluation during the second transformation unit. The students’ representations by way of different modes and media show their choices, what they perceive as central or peripheral. The representation itself indicates what students’ value as natural or divergent, important or unimportant, central or peripheral, necessary or unnecessary and so on. It is about their choices and configurations of signs. It is also a matter of evidence, argument and rhetorical structure.

Still another aspect concerns both the socio-emotional group climate and the task-oriented interaction among the students. It entails issues like how a group develops (or does not develop) a common responsibility for the work, if someone is left outside or if someone takes over, how students talk to each other while they are searching for information and forming their representations and so on. Central question are: Who is active and who is passive? In what ways are the group supporting or hindering learning? How can the group handle tensions or insecurity? During this process, the teachers may function as a support for the group. But is their interaction dominated by technical problems, problems of discipline, content-oriented questions, or do teachers simply interrupt group work by delivering last week’s test results from another subject area? Interventions may also be carried out in terms of formative assessments to support the students’ learning of a task.

In the Secondary Transformation Unit the product, the representation, is presented. Central questions are: How is the work carried out in relation to the student’s earlier work? But also: How is the work in relation to the work of other students? The activity is oriented towards meta-learning and consciousness-raising activities. To be able to make productive reflections, it is essential to relate these to the signs of learning during the process. The role of the teacher is, of course, also to give a summative assessment of the work, the presentation and the product.

A crucial aspect of the LDS model is how sign-making can be documented as an indication of learning. It is not always easy to detect how and when learning occurs since learning is a term for many different and complex activities. Learning can be a change of behaviour and skills but also increased memory and a deeper understanding of new concepts. Learning can be an increased capacity to solve new problems or even to solve old problems in a new way. When activities are carried out without too much effort, we can see learning. When students start to discuss in new terminology, we can see learning. When students suddenly can solve a problem, learning has occurred. When students talk to each other about what they find on the Internet, the social aspect of learning is clear.

New technologies and new ways of working didactically raise new obstacles and problems. In the following, I will illustrate some of the critical incidents observed concerning what students might learn in a digital environment. The following examples are from case studies of the digital-learning environment in some Swedish schools (Selander et. al., 2007). These schools are in many senses in the forefront of using digital media; they have changed their pedagogy towards a more dynamic perspective on learning. But even if many dynamic aspects are emphasized, some obstacles, due to tradition or lack of experience, may also be noticed.

#### FOCUS OF INTEREST

In a distance Swedish-language course (upper secondary level), the students send their tasks to the shared, virtual class room. The idea is that the students should make comments on each other’s texts. In spite of this, the communication is highly teacher-oriented and the students do not use the medium to talk to each other. The course has the character of an older (letter-based) distance course. As a contrast, in a theme project among Grade seven in the compulsory school, the pupils highlight four different themes. One of the groups work with a digital camera, external memory discs and (both stationary and laptop) PCs, and they use programs like iMovie, iPhoto and Garageband. The students’ questions to the teacher are more or less only about the medium and the technology itself. Questions are raised about how to transfer filmed

material from the camera to the computer, or how to create neat bridges between different film sequences, for example. The teacher answered these questions. In their work with digital films - making interviews, editing the material and so on - the students were involved in creative learning activities. They invested interest, made many decisions about what information to collect and select for presentation and how to present the story. They designed both the content and the form of presentation, although the content aspect was overshadowed by technical problems.

Learning in the digital space can also be arbitrary and characterized by chance, sometimes called “learning in the periphery”. On the one hand this is a way to train for “real” problem-solving situations, with the possibility of opening up the unexpected. On the other hand, there is also a risk of losing focus. Pupils sometimes change their own questions to fit the information accessible at that moment. The massive amount of information available and the demands of selecting and evaluating it make school work more complex and diversified than ever before. Digital media carry resources which allow students to engage in meaning making. The possibilities to develop own ideas and get inspired by others may increase (Holm Sörensen et.al., 2006), and the medium may inspire pupils and students to have fun during their work, even if “having fun” is not linked as much to learning as to play (Alant et.al., 2003; Drenoyianni, 2006).

Writing and information-seeking are the most prevalent activities on the Internet, and sometimes “cut and paste” pedagogy dominates, like when information is not worked on but just copied into, for example, a Power Point presentation. There also seems to be a stress factor when students try to get finished before they have actually completed their investigation (Holm Sörensens et.al., 2006). It seems that schools, in general, are not yet used to the new information structure: neither its communicative and constructive possibilities, nor its possible misuses.

#### IN CONCLUSION

In this article, I have elaborated some aspects related to a design theoretic perspective on learning. The change of information flows, the globalization of information in many respects, and the changing role of schooling put new demands on our understanding of learning. However, learning is not an activity restricted to the school context. Rather, learning takes place in many informal and semi-formal instances as well. My main argument here is that to understand learning, we have to understand it as a sign producing activity in a specific situation within an institutional framing (with its stronger or weaker regulations). It is a perspective that highlights aspects that hitherto in many respects have been taken for granted: the role of modes and media in a process of transforming and forming signs.

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<sup>1</sup> This is not the same as an unconscious eclectic approach. Rather, it stems from careful elaborations of two different ways of approaching communication, social interaction and use of artefacts in relation to learning. Inspiration comes from among others Paul Ricoeur, who developed a hermeneutic understanding of time in narratives from the crossroad between Aristotle's work on poetics and Augustine's reflections on time (Ricoeur, 1983).

<sup>2</sup> In extreme cases people can think and understand without being able to show this clearly. However, also in these cases signs are the only way to interpret the understanding of the other, for example through then twinkling of an eye or through decoded electrical signals in the brain.

<sup>3</sup> See coming diss. by Eva Insulander.

<sup>4</sup> The project "Digital Learning Resources - a User Perspective", financed by Learn-IT, KK-stiftelsen.

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